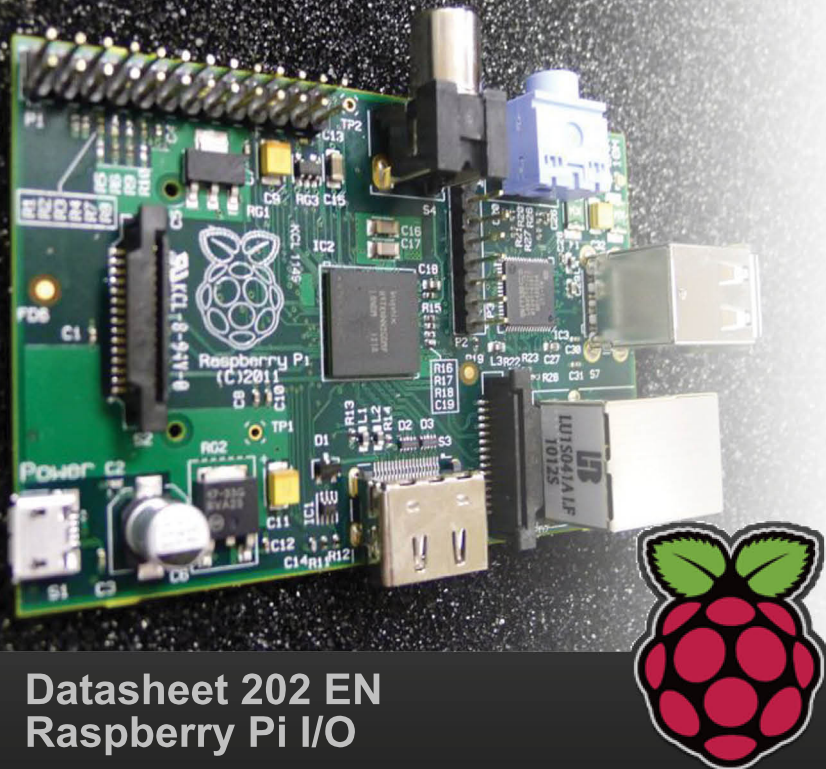




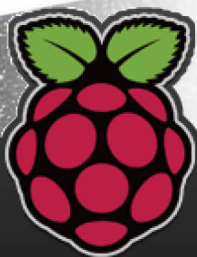
Raspberry Pi

An ARM GNU/Linux box for \$25. Take a byte!

The Raspberry Pi Foundation produces an ultra-low-cost credit-card sized GNU/Linux computer for teaching computer programming to children.

Datasheet 202 EN
Raspberry Pi I/O

Raspberry Pi Foundation
Computing Devices



General Purpose I/O

The Raspberry Pi allows peripherals and expansion boards (such as the upcoming Gertboard) to access the CPU by exposing the inputs and outputs.

The production board has a 26-pin 2.54mm (100mil) expansion header, arranged in a 2x13 strip. They provide 8 GPIO pins plus access to I2C, SPI, UART), as well as +3V3, +5V and GND supply lines. Pin one is column 0 on the bottom row.

Voltages

Voltage levels are 3v3. There is no over-voltage protection on the board.

The intention is that people interested in serious interfacing will use an external board with buffers, level conversion and analog I/O rather than soldering directly onto the main board.

I2C

I2C (Inter-Integrated Circuit; generically referred to as "two-wire interface") is a multi-master serial single-ended computer bus invented by Philips that is used to attach low-speed peripherals to a motherboard, embedded system, cellphone, or other electronic device.

It is also possible to reconfigure some of the pins to provide a second I2C interface.

Boot Messages

Kernel boot messages go to the UART (serial port) at 115200bps.

Power pins

Maximum permitted current draw from the 3v3 pin is 50mA.

Maximum permitted current draw from the 5v pin is the USB input current (usually 1A) minus any current draw from the rest of the board.

Model A: 1000mA - 500mA -> Max power draw: 500mA

Model B: 1000mA - 700mA -> Max power draw: 300mA

Notes

On the production board, all the UART, SPI and I2C pins can be reconfigured as GPIO pins, to provide a total of 17 GPIO pins.

At least some of the GPIO pins support PWM.

GPIO voltage levels are 3V3 and are not 5V tolerant.

Each GPIO can interrupt high, low, rise, fall, change.

It is also possible to reconfigure some of the pins to provide an ARM JTAG interface.

It is also possible to reconfigure some of the pins to provide an I2S (hardware mod may be required) or PCM interface.

MICRO USB
POWER

128MB
256MB
RAM

A 128MB B 256MB RAM

Top Row	5V0	DNC	GND	TXD	RXD	GPIO1	DNC	GPIO4	GPIO5	DNC	GPIO6	SPI_CE0_N	SPI_CE1_N
Bottom Row	3V3	SDA0	SCL0	GPIO7	DNC	GPIO0	GPIO2	GPIO3	DNC	SPI_MOSI	SPI_MISO	SPI_SCLK	DNC

Colour legend	
+5V	
+3.3V	
Do not connect	
UART	
GPIO	
SPI	
I2C	

General Purpose Input/Output (GPIO)

General Purpose Input/Output (a.k.a. GPIO) is a generic pin on a chip whose behavior (including whether it is an input or output pin) can be controlled (programmed) through software.

For more information see: the wikipedia article.

On the production board, all the UART, SPI and I2C pins can be reconfigured as GPIO pins, to provide a total of 17 GPIO pins. Each of their functions are detailed in the chipset datasheet.

The available alternative functions and their corresponding pins are detailed below.

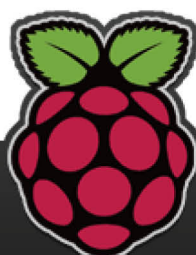
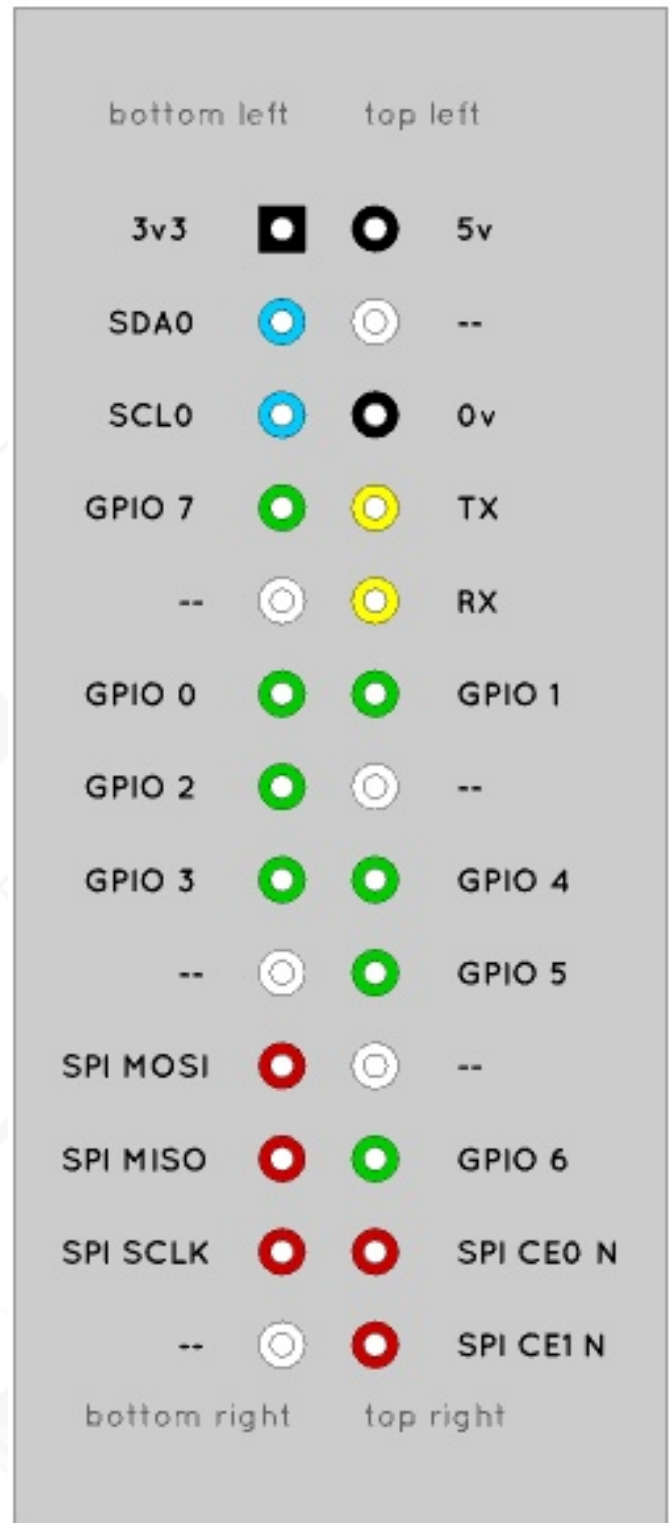
These numbers are in reference to the chipset documentation and may not match the numbers exposed in linux or detailed above.

Only fully usable functions are detailed, for some alternative functions not all the necessary pins are available for the functionality to be actually used.

All exposed pins can be used for GPIO

Gertboard

For more information please see other articles and FAQ entries about the Gert-Board,



Official Website:
Official Forums:
Official Store:

www.raspberrypi.org
www.raspberrypi.org/forum
www.raspberrypi.com

Community Website:
Community Forums:
Community Wiki:

www.frambozenbier.org
www.edugeek.net/raspi
www.elinux.org/R-Pi_Hub

Could you write an article, datasheet or mini-guide? Please send your ideas or content to [articles @ Frambozenbier.org](mailto:articles@Frambozenbier.org)

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